Brookhaven National Laboratory
Medical Department
9.4 Tesla MRI, De-energizing and Warming-up Procedure

1. Purpose: This procedure includes the processes of de-energizing and warming-up of the super-conducting Animal MRI magnet to enable repair work to be performed on the magnet bore.

2. Prerequisites for de-energizing the magnet and subsequent boiling-off cryogens:

    - Postings

        i. 9-430C shall be posted with the appropriate signage for Static Magnetic Fields and additional postings advising that the “Magnet is Always On” until the magnet is verified as completely de-energized.

        ii. 9-430C shall be posted “Authorized personnel only”.

    - Access control

        i. The door to the Animal MRI Suite will be locked when unattended.

        ii. During de-energizing and boiling-off work, the assigned Safety Watch will prevent access to the Animal MRI Suite by unauthorized personnel and will remain in the control room while people are in the magnet room in case of accidental quenching of the magnet.

        iii. The roof hatch will be opened during the whole procedure.

    - Safety related equipment

        i. The installed O2 Monitor shall be operational during the de-energizing/warming-up procedure.

        ii. The Bacarach Sentinal 44 Monitor shall be used in the event of installed O2 system failure and only from remote location indication (outside room 9-430C).

        iii. During the process of de-energizing any authorized personnel entering the Animal MRI Magnet Room (9-430-C), will utilize the EIA PD-140 Hand-Held Metal Detector to ensure that no metals are on their person.

        iv. If metals are detected, the individual will utilize the 15lb. pull, 1000 Gauss Test Magnet to ensure the items they are carrying are non-magnetic.

    - Personal protective equipment (PPE)

        i. As an additional precaution, the Installation Engineer will wear a personal (lapel), O2 monitor during the power supply set up and removal.

- Electrical Safety Requirements

    i. The magnet power supply will be connected to the magnet via cables and remain exterior to the room.

- Approvals

    i. The Medical Department ESH Coordinator and the Principal Investigator/ Life Sciences ALD shall approve this procedure.

3. Initial De-energizing and warming-up Procedures:

    i. De-energizing the magnet. The procedure will follow the guideline of the de-energizing procedure, which has been previously approved.

    ii. Flushing the helium chambers with helium gas.

    iii. Pumping N2 gas into the vacuum chamber through the N2 chambers to speed up the process of evaporation.

    iv. Naturally boiling-off rest of the cryogens overnight.

    v. Repeating steps ii and iii if it is necessary.

    vi. Ensure that the magnet is sealed properly from atmosphere.

4. Emergency Response

    i. In the event of an accidental quench or O2 alarm, all personnel shall remain outside the magnet room. Re-entry shall only be authorized by Facility Support and the Installation Engineer.

    ii. Safety Watch will be on hand during the initial hookup of the power supply to the magnet and subsequent removal of the power supply after de-energization.

    iii. All emergencies shall be reported by calling extension 2222 or 911.

5. Equipment required for de-energizing the magnet:

    Bruker provides power supply and other instrument and tools.

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